

REMARKS

In response to the Official Action dated July 29, 2002, Applicant amends his application and requests reconsideration. In the Amendment, claims 1, 6, 10, 13 and 14 have been amended, claims 10, 13 and 14 have been rewritten in independent form, and claims 7 has been cancelled and its subject matter has been incorporated into claim 1. No new matter has been added. Claims 1-6 and 8-14 are now pending and under examination.

Applicant appreciates that Examiner Cooley has indicated that claims 10, 13 and 14 would be allowable if rewritten to overcome the rejection under 35 U.S.C. §112 and to include all the limitations of the base claim and any intervening claims. Claims 10, 13 and 14 have been rewritten in independent form, and Applicant believes that the rejection under 35 U.S.C. §112 has been overcome. Accordingly, claims 10, 13 and 14 are in allowable form.

With respect to the objections to the specification, Applicant has replace the word "minimise" with the word "minimize" and provided a new title. Therefore, the objections to the specification have been overcome.

Claims 6-10 and 12-14 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter of which Applicant regards as the invention. First, claims 6 and 13 were rejected on the ground that the terms "the base" and "the cover" lack antecedent basis. In accordance with Examiner Cooley's suggestions, Applicant has amended claims 6 and 13 to replace the terms "the base" and "the cover" with the terms "the base parts" and "the cover part," respectively. Accordingly, this ground of rejection has been overcome.

In addition, claims 12-14 were rejected on the ground that they omit essential structural cooperative relationships of elements. For the following reasons, Applicant respectfully requests Examiner Cooley to reconsider this ground of rejection.

According to the MPEP (see 2164.08(c) and 2172.01) and *In re Mayhew*, a rejection based on the grounds that a critical or necessary limitation is missing should be made only when the language of the specification or a statement by Applicant makes it clear that the limitation is critical or essential for the invention. In the Office Action, it was not alleged that either Applicant or the specification considers the alleged

essential relationships as critical or essential to the invention. In fact, Applicant does not consider the relationships as critical or essential to the invention. Therefore, this ground of rejection is improper, because it does not meet the requirements of the MPEP and *In re Mayhew*.

Claims 1-9 and 11 were rejected under 35 U.S.C. §102(b) as being anticipated by *Jones* (U.S. Patent 2,321,144). The cancellation of claim 7 renders the rejection of claim 7 moot. For the following reasons, it is respectfully submitted that claims 1-6, 8, 9 and 11, as amended, are not anticipated by *Jones*.

As described in paragraphs 25-27 of the specification, an object of the invention, as defined by claim 1, is to use an abutment to restrain the axial movement of the rotor when the cover is removed while the rotor is still rotating. This prevents the supply pressure on the rotor from lifting the rotor and/or the cover away from the base and turning them into projectiles, when the cover is in the process of being removed. To this end, in the separator of amended claim 1, the abutment has a radially directed flange for mounting to the base part of the housing. The use of the mounting flange ensures that the abutment is securely attached to the base so that the abutment can withstand the forces generated by the supply pressure.

The separator of *Jones* does not have an abutment for preventing the supply pressure on the rotor from lifting the rotor and/or the cover away from the base and turning them into projectiles, wherein the abutment has a radially directed flange for mounting to the base part of the housing. In *Jones*, the object of the invention is to achieve high degree of purification, not to prevent the supply pressure from lifting the rotor and/or the cover away from the base. The annular guard 24, which is cited in the Office Action as anticipating the abutment of amended claim 1, is only used "to prevent liquid discharged from the rotor from contacting the outer wall of the rotor and acting to retard the rotation thereof" (see page 2, left column, lines 48-59). Therefore, there is need to securely attach the annular guard 24 to the base. In fact, the guard is only attached by means of spring-pressed detents 25, and it can be removed by merely lifting a handle 36. The spring-pressed detents 25 cannot withstand the forces generated by the supply pressure and therefore cannot prevent the supply pressure from lifting the rotor and/or the cover away from the base when the cover is in the process of being removed.

Accordingly, *Jones* does not disclose or suggest the abutment of amended claim 1 and, therefore, cannot anticipate amended claim 1, as well as claims 2-6, 8, 9 and 11 that depend from amended claim 1.

Claim 12 was rejected under 35 U.S.C. §103(a) as being unpatentable over *Jones* in view of *Brimhall* (U.S. Patent 5,665,047). For the following reasons, it is respectfully submitted that claim 12 is patentable over the cited references.

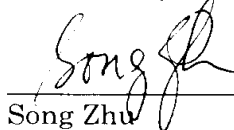
Since claim 12 depends from amended claim 1, the separator of claim 12 also includes the abutment of amended claim 1. As discussed above, *Jones* does not disclose or suggest the abutment of amended claim 1. In addition, the Office Action does not allege that *Brimhall* discloses or suggests this feature. Therefore, the Office Action has not established that the cited references disclose or suggest every element of claim 12. Accordingly, claim 12 is not obvious over the cited references.

In light of the foregoing remarks, this application is considered to be in condition for allowance, and early passage of this case to issue is respectfully requested. If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #178/50688).

October 29, 2002

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VERSION WITH MARKINGS SHOWING CHANGES MADE

IN THE SPECIFICATION

Paragraph [0024] has been amended as follows:

[0024] The centrifugal separator structure thus so far described, and its operation, is essentially conventional; liquid supplied at elevated pressure to duct 20 passes through valve means 80 and into the spindle passage 60, passing therefrom via the container and discharge apertures 72 to the drain duct 22. Some of the liquid is directed by way of nozzle 78 to impinge upon the spindle-mounted vanes 76 to spin the rotor and permit centrifugal separation of solid contaminants from the liquid that passes through the container space. It will be appreciated that the rotor, full of liquid has a significant weight and to [minimise] minimize the downward thrust force on the lower bearing 48, the liquid supply pressure is used to exert an axial lifting force on the spindle to compensate therefor.

IN THE CLAIMS

Claims 1, 6, 10, 12 and 13 have been amended as follows:

1. (Amended) A centrifugal separator for separating solid contaminants from a liquid supplied thereto at elevated pressure, said separator comprising:

a housing having a base part and a cover part releasably secured to each other, and

a separation rotor contained in said housing between the base and cover parts, said rotor being mounted in said housing by a spindle so as to be rotatable about an axis extending between the base and cover parts and to be displaceable along the axis between limits defined by said base and cover parts;

wherein said centrifugal separator further comprises a rotor restraint comprising:

a restraining surface forming part of, or carried by, the rotor and extending radially and circumferentially of the rotor and facing away from the base part, and

an abutment carried by the base part and having an abutment surface overlying the restraining surface at or beyond the limit of axial displacement of the rotor from the base part defined by the cover part, said abutment being operable to prevent further axial displacement of the rotor away from the base part if the cover part is removed; and

wherein the abutment comprises an axially extending body having, at a first end, a radially directed mounting flange for securing the abutment to the base part of the housing, and, at a second end, a radially inwardly directed flange overlying the restraining surface.

6. (Amended) A centrifugal separator according to claim 1, wherein the abutment is releasably secured to the base part and removable therefrom to permit removal of the rotor by axial displacement away from the base part.

10. (Amended) A centrifugal separator for separating solid contaminants from a liquid supplied thereto at elevated pressure, said separator comprising:

a housing having a base part and a cover part releasably secured to each other, and

a separation rotor contained in said housing between the base and cover parts, said rotor being mounted in said housing by a spindle so as to be rotatable about an axis extending between the base and cover parts and to be displaceable along the axis between limits defined by said base and cover parts;

wherein said centrifugal separator further comprises a rotor restraint comprising:

a restraining surface forming part of, or carried by, the rotor and extending radially and circumferentially of the rotor and facing away from the base part, and

an abutment carried by the base part and having an abutment surface overlying the restraining surface at or beyond the limit of axial displacement of the rotor from the base part defined by the cover part, said abutment being operable to prevent

further axial displacement of the rotor away from the base part if the cover part is removed;

wherein the abutment is releasably secured to the base and removable therefrom to permit removal of the rotor by axial displacement away from the base;

wherein the abutment comprises an axially extending body having, at a first end, a radially directed mounting flange for securing the abutment to the base part of the housing, and, at a second end, a radially inwardly directed flange overlying the restraining surface;

wherein the axially extending body is a tubular, circumferentially continuous body;

wherein the abutment is configured to engage the base part by approach thereto in an axial direction and to be secured to the base part by rotation of the abutment about its axis; and

[according to claim 9,] wherein the mounting flange has at least one mounting aperture therethrough having a varying radial width circumferentially and the base part carries a corresponding number of headed fasteners each dimensioned to pass through a said mounting aperture at the point of greatest radial width but not at the point of least radial width of the mounting aperture.

13. (Amended) A centrifugal separator for separating solid contaminants from a liquid supplied thereto at elevated pressure, said separator comprising:

a housing having a base part and a cover part releasably secured to each other, and

a separation rotor contained in said housing between the base and cover parts, said rotor being mounted in said housing by a spindle so as to be rotatable about an axis extending between the base and cover parts and to be displaceable along the axis between limits defined by said base and cover parts;

wherein said centrifugal separator further comprises a rotor restraint comprising:

a restraining surface forming part of, or carried by, the rotor and extending radially and circumferentially of the rotor and facing away from the base part, and

an abutment carried by the base part and having an abutment surface overlying the restraining surface at or beyond the limit of axial displacement of the rotor from the base part defined by the cover part, said abutment being operable to prevent further axial displacement of the rotor away from the base part if the cover part is removed; and

[according to claim 1,] wherein the centrifugal separator further comprising means responsive to the presence of the abutment to facilitate securing of the cover part to the base part, whereby the cover part is prevented from being attached to the base part if the abutment is missing.

14. (Amended) A centrifugal separator for separating solid contaminants from a liquid supplied thereto at elevated pressure, said separator comprising:

a housing having a base part and a cover part releasably secured to each other, and

a separation rotor contained in said housing between the base and cover parts, said rotor being mounted in said housing by a spindle so as to be rotatable about an axis extending between the base and cover parts and to be displaceable along the axis between limits defined by said base and cover parts;

wherein said centrifugal separator further comprises a rotor restraint comprising:

a restraining surface forming part of, or carried by, the rotor and extending radially and circumferentially of the rotor and facing away from the base part, and

an abutment carried by the base part and having an abutment surface overlying the restraining surface at or beyond the limit of axial displacement of the rotor from the base part defined by the cover part, said abutment being operable to prevent

further axial displacement of the rotor away from the base part if the cover part is removed; and

[according to claim 1,] wherein the centrifugal separator further comprising interlock means responsive to the presence of the abutment to enable supply of the liquid to the rotor, whereby the liquid is blocked from the rotor if the abutment is missing.